A COMPARISON OF IMPLICIT VERSUS EXPLICIT MEASURES IN EVALUATING OUTCOMES AFTER A PREGNANCY PREVENTION ACTIVITY

A thesis presented to the faculty of the Graduate School of
Western Carolina University in partial fulfillment of the
requirements for the degree of Master of Arts in Psychology.

By

Amanda Lynn Okon

Director: Dr. Winford Gordon
Assistant Professor of Psychology
Psychology Department

Committee Members: Dr. Kia K. Asberg, Psychology
Dr. Harold Herzog, Psychology

April 2010

ACKNOWLEDGEMENTS

I would like to extend many thanks to my director, Dr. Winford Gordon, for his guidance, support, wisdom, and time from start to finish. I would also like to thank my committee members, Dr. Harold Herzog and Dr. Kia Asberg, for their ideas and careful review. Without each of you, this thesis would not have been possible.

TABLE OF CONTENTS

LIST OF FIGURES

ABSTRACT

A COMPARISON OF IMPLICIT VERSUS EXPLICIT MEASURES IN EVALUATING OUTCOMES AFTER A PREGNANCY PREVENTION ACTIVITY

Amanda Lynn Okon, M.A.

Western Carolina University (April, 2010)

Director: Dr. Winford Gordon

The United States boasts one of the highest teen pregnancy rates in developed countries and in order to alleviate this trend, organizations have created teen pregnancy prevention programs. While many believe this educational effort will help adolescents avoid pregnancy, the trend simply has not changed. This may be due to some outcome measures suggesting that the programs are working even though they fail to change adolescents' attitudes related to sexuality and pregnancy. These programs may rely too heavily on self-report measures of attitude. There were three hypotheses:

1. The two activities would have different effects on the explicit measure of attitude.
2. The two activities would not have different effects on the implicit measure of attitude.
3. The changes in the implicit measure of attitude would not be correlated with the changes in the explicit measure of attitude.

76 first-year students were split into a control and experimental group and participated in two different activities, one activity was a teen pregnancy prevention activity from an accredited North Carolina program. Attitudes were measured before and after the activities both implicitly and explicitly using the Affect Misattribution Procedure (AMP) and a survey derived from an accredited North Carolina program.

After running separate two-way mixed between-within analysis of variance for both the survey scores and the AMP scores, as well as Spearman Rho correlations for pre to post change in AMP scores and survey scores for both activity groups, it was concluded that all three hypotheses were supported.

INTRODUCTION

According to the National Center for Health Statistics (NCHS) (2009), the rate of pregnant teens has been decreasing steadily for almost a decade until recently when a small increase was recorded. However, even with this steady decline, the United States still boasts one of the highest teen pregnancy rates in developed countries and the rate of births to unmarried teens has increased dramatically (Guttmacher Institute, 2002). In order to reverse this trend, many organizations have created teen pregnancy prevention programs. These programs mainly offer general sex education emphasizing reproductive biology, information on sexually transmitted diseases, statistics and consequences of teen pregnancy, and contraceptive education or abstinence advocacy. While many believe this educational effort will help adolescents avoid pregnancy, the trend simply has not changed. Why are these efforts failing? Why do the organizations delivering the programs believe their efforts work when pregnancy rates in the United States remain among the highest in the developed world? Could it be because some outcome measures suggest that the programs are working even though the programs fail to change adolescents' attitudes related to sexuality and pregnancy?

If attitudes are not changing, we can expect that teen sexual behavior will not change and pregnancy rates will remain high until a program actually changes teen attitudes toward sexual behavior and pregnancy. Therefore we must know which programs actually change these attitudes. Identifying an effective educational program may require a new approach to outcome assessment.

It is possible that current outcome assessments are too dependent on self-report measures of attitude. It seems logical to assess a program by asking teenaged participants how they feel about sexual behavior and pregnancy but this measure may be flawed. Such self report measures are subject to self censoring and socially desirable responding. Further, a self report measure requires that the respondent be able to report on a personal belief or attitude. Not all beliefs and attitude are accessible to the individual to inform such reports. Thus, one alternative

measurement approach might use an implicit measure of attitude instead of the typical explicit self report measures.

This study has one goal, to compare a traditional explicit measure of attitude and a newly developed implicit measure of attitude toward teen sexual behavior and pregnancy. This may be an important step toward revealing a new approach to evaluation. While this measurement strategy will not lead directly to new educational initiatives, it will provide a tool for determining which interventions actually work in terms of changing attitudes and ultimately will lower some of the future risks associated with teen pregnancy such as high drop out rate, higher risk of living in poverty, and higher risk that the child of a teen parent will become a teen parent themselves.

LITERATURE REVIEW

Trends and Risk Factors for Teen Sexual Behavior and Pregnancy

While the core goal of this study was to evaluate an outcome assessment strategy, the work was intentionally related to the problem of teen pregnancy. Teen pregnancy is a significant issue and the urgency for improving program assessment of pregnancy prevention interventions is more obvious if you consider the scale of the problem.

While the teen pregnancy rate slowly declined from 1990 through 2004, there was a slight but notable increase between 2004 and 2006. In that period the birth rate increased by 1.5 births per 1000 teens (NCHS, 2009). Thus, even though the rate of pregnant teens has decreased over most of the past decade, both this recent change and the absolute rate are troubling. The United States continues to hold one of the highest teen pregnancy rates in the world. For example, the U.S. teen pregnancy rate remains nearly twice that of both Canada and Great Britain (McKay, 2006).

The recent increase in pregnancy was most evident in the 18 to 19 year old group. This age group (the group this study will consider) saw a steady decline in birth rates between 1991 and 2005 but their rate only fell 26 percent while the younger 15 to 17 year old group saw a 45 percent decline. Then, in 2006, the 18 to 19 year old group saw an annual increase of 4 percent (NCHS, 2009).

Another troubling trend within this data is a progressive increase over the past decade in the rate of children born to unmarried teens. In the 1950's only 13 percent of births to teens were to unmarried teens. However, as of 2000, the rate has climbed to an astonishing 79 percent (Guttmacher Institute, 2002). According to the Guttmacher Report (2002), this increase may be due to a change in attitudes. Today, people may delay marriage until they are in their twenties, thirties, or forties. In the 1950's the average age at marriage for women was just over 20 and many marriages would have involved teen aged women. These women could then become teen mothers within the context of marriage. Today, few teen mothers are married. Apparently the

attitude toward teen pregnancy and motherhood outside of marriage is not as negative as it once was (Guttmacher Institute, 2002).

This shift in attitudes is mirrored in public policy. An unmarried mother, even one receiving child support from a child's father, is quite likely to receive government assistance (*It's time…to get informed*, 2009). In fact, $9.1 billion in federal aid is spent each year to support teens who become pregnant and have children (The National Campaign to Prevent Teen Pregnancy, 2009). Some shift in attitude must have occurred before the government could create this social support program for behavior that was once considered unacceptable.

Interventions for Reducing Teen Pregnancy

Efforts to reduce the rate of teen pregnancy have embraced a wide range of sex education programs. These range from abstinence only to general education programs that include information on contraception. Some programs are peer taught and some include parent-child collaboration or community service. When programs fail to demonstrate positive outcomes, practitioners try combining elements of different programs to find something that is more effective. In general, pairing any sex education program, even abstinence only programs, with skill building, for example social skills training, increases the reported program effectiveness (Allen, Seitz, & Apfel, 2007).

Generally students state that prevention programs being administered at school are "too little, too late" and ineffective (Fay & Yanoff, 2000). Instead, McKay and Holowaty (1997) found that teens preferred a program that discussed contraceptives, treatment of sexually transmitted diseases, and how to make healthy and valuable decisions about relationships and sexual activity. Beyond content, Kirby (1995) adds those effective programs are all at least fourteen hours in duration.

Smylie, Maticka, and Boyd (2008) developed and evaluated a program that included all of these features. They used interactive teaching methods rather than traditional lecture. For the students, attendance was optional yet 82 percent of the participants attended all five sessions. A post-program assessment questionnaire that included items on both attitudes towards and

knowledge of contraceptives and sexual activity showed that the program was effective for sexual education.

The programs described above claim to successfully educate adolescents on sexuality and pregnancy prevention. Not all programs make such claims. Yampolskaya, Brown, and Vargo (2004) compared two popular pregnancy prevention programs geared towards reaching children in lower socioeconomic households, the Youth Asset Development Program (YADP) offered by the YMCA and the Postponing Sexual Involvement Program (PSIP) which was offered through some school districts. These programs emphasize the importance of school, provide education about sexuality and contraceptives, and promote healthy living. In the study, student groups were drawn from four different schools. One group completed the YADP program, one group went through the PSIP program and two groups served as controls. In the post program evaluation the PSIP group and their control group both held the same positive views of the importance of education and graduation and recognized the risks of sexual behavior. Participants in the YADP group liked school significantly more than their control group, and both groups thought that going to college was a positive option. However, those in the YADP group expressed more interest in engaging in a sexual relationship sooner, becoming a parent within the following three years, and were more accepting of teen parenthood then those in the control group. Yampolskaya concluded that both the YADP and PSIP programs encouraged an optimistic view towards school. However, there were no clear changes in attitude toward sexual behavior.

The Problem with Measuring Change

Many sex education programs report success. If they are actually successful, there is a troubling disconnect between these outcome scores and the subsequent behavior of the participants. The programs seem to be working, yet teens continue to get pregnant.

There are two possibilities that should be considered. First, teen attitudes may not predict teen behavior. This is unlikely. Specific attitudes are generally predictive of specific behavior, and the next section will offer support for this assertion. Second, the explicit measure of attitude used in assessing the program outcome is flawed and some other measure is needed.

The section on measuring attitudes will explain the potential flaws in current measures and describe an alternative measurement approach.

What is the Relationship between Attitudes and Behavior

Why do individuals act the way they do? According to attribution theory individual actions are guided by individual beliefs or attitudes. For example, if someone believes in a liberal social policy, then that person votes for the policy. If someone believes that smoking is dangerous, then that person doesn't smoke (Heider, 1958; Weiner, 1995). Attribution Theory is so broadly accepted that most research is focused on exceptions to the rule not vice versa. There certainly are exceptions to the link between attitude and behavior. The bystander effect, for instance, influences individuals in groups to help others less frequently and react in a manner they think is socially acceptable to those around them (e.g., Baron & Byrne. 1997). Deindividualization, is another example where individuals behave in conformity to a group rather than according to individual attitudes. Outside of a recognized set of exceptions, attitudes guide our behavior and specific attitudes guide behavior specifically (Baron & Byrne, 1997).

Overall, the stronger an attitude is the more likely it is to be accessed and the more influence is has over behavior (Baron & Byrne. 1997). However, recent work has demonstrated that not all attitudes are equally accessible. Most notably, attitudes may be explicit or implicit (Nosek, 2007). An individual is aware of and can access and voluntarily report explicit attitudes. These attitudes will clearly influence thoughts and behavior (Rydell & McConnell, 2006). In contrast, an individual is typically unaware of implicit attitudes (Geer & Robertson, 2005). However, even though an individual is unaware of an implicit attitude, it can still influence their thoughts and actions (Rydell & McConnell, 2006).

Measuring Attitudes

Attitudes may be assessed with either implicit or explicit measures. An explicit measure requires a conscious response or report. The individual must be aware of the attitude in order to generate a report. Thus, explicit measures can only assess explicit attitudes (Payne, Burkley, Stokes, 2008). According to Gawronski and Lebel (2008), self-report measures are the most common way to evaluate explicit attitudes.

Self-reports, gathered as written questionnaires or verbal interviews, have three distinct sources of error. First, a participant may give a response based on the perceived social desirability of the answer. That is, the participant gives a "good" answer. Socially desirable responding is especially likely when assessing attitudes about private or controversial topics, such as sex, politics, race, religion, etc. Second, participants may not respond truthfully simply because they censor or constrain their responses. Participants may not report what they actually believe because they are either aware of the attitude and do not wish to disclose it. Finally, a participant may not report an attitude because the individual is unaware of the attitude (Payne, Burkley, Stokes, 2008).

Assessments following pregnancy prevention programs ask about sexual behavior and about socially sensitive issues such as parenthood and abortion. Thus, responses on these explicit measures may be susceptible to skewed socially desirable responding or self-censorship. Further, to generate a report about a belief, the individual must be aware of what she believes. Since some attitudes are implicit and as such outside our awareness we cannot generate a report of that attitude. These implicit attitudes are simply outside our direct access.

Implicit measures of attitude avoid these response errors. An implicit measure of attitude is quite unlike the typical self-report used as an explicit measure. Implicit measurement procedures do not allow participants to sit and think about a response. Implicit measures typically demand very quick responses (Nosek, 2007). Thus, implicit measures are less likely to be skewed because there is little time to evaluate what is desirable or to censor the response.

Implicit measures do not require, or allow, participants to create a verbal report about the attitude being considered. Thus, these measures can be used even when the individual cannot generate such a report. That is, implicit measures can evaluate implicit attitudes. Fortunately, implicit measures can also be used to evaluate explicit attitudes (Fazio & Olson, 2003).

The Implicit Association Test (IAT) and the Affect Misattribution Procedure (AMP) are the two implicit measures of attitude that are currently in widest use.

Implicit Association Test (IAT)

As described by Greenwald, McGhee, and Schwartz (1998), the IAT assesses the association between specific concepts and specific attributes. The assessment is non-verbal as participants respond on a keyboard. For example, a left key press would signal that a specific target word is an example of one concept and right presses would signal that a word is an example of an alternative concept. Similarly, left key presses signal that a word has one attribute and right key presses signal an alternative attribute. In the original demonstration of the procedure Greenwald, McGhee and Schwartz (1998) asked the participants to discriminate between names of flowers versus names of insects or names of musical instruments versus names of weapons as concepts and pleasant versus unpleasant as attributes. As participants categorized words their reaction times were measured. In the first phase, the target-concept discrimination, if the word was a type of flower or instrument the participant pressed a left key. If it was a type of insect or weapon the participant pressed a right key. Second, in the evaluative attribute condition, they judged whether words were pleasant or unpleasant and responded left for pleasant words and right for unpleasant words. Next, in the congruent "combined" tasks the participant responded on the left key if the word was a flower or an instrument or pleasant and vice versa. In the incongruent combined tasks the participants responded on the left key if the words were flower or instrument or unpleasant and vice versa. They hypothesized and found that the reaction times would be faster in the congruent condition. That is, if the left responses were for flowers and instruments as targets or pleasant words as an attribute and the participant believed flowers had pleasant attributes then responding to the left key would be quick and easy. It was the "good" key. However, if the targets and the attribute were incongruent, e.g. insects and pleasant, then responding would be slower (Greenwald, McGhee, & Schwartz, 1998). Thus, differences in reaction times reveal the participant's evaluation of an image. The evaluation was based on the participant's attitude toward the image.

Because the IAT uses reaction times it is exclusively a single subject procedure. Further, because the IAT requires multiple tests to collect one measure of attitude it is time consuming.

Finally, the reaction time measure in the IAT is rather unstable, a potential problem in test-retest procedures (Greenwald, McGhee, & Schwartz, 1998).

Since its development, the IAT has been widely used. Fiedler, Messner, and Bluemke (2006) believe that the procedure is better for assessing attitudes towards sensitive subjects such as racial prejudice. Racial prejudice is difficult to assess because self-censoring and socially desirable responding on self-report responses. Instead of taking negative comments about the IAT as constructive criticism and finding ways to improve the measure, IAT supporters argue that the current IAT is a reliable measure of implicit attitude (Blanton, Jaccard, Christie, & Gonzales, 2007).

Affect Misattribution Procedure (AMP)

In the AMP, the participant is presented with a series of stimulus triads consisting of a priming stimulus, a neutral target, and a filler stimulus. The participant is asked to judge whether the neutral target is "more or less pleasant than average." Since the target is neutral the ratings would be a near equal mix of more and less pleasant. However, if the prime has positive or negative emotional valence then the ratings of the target shift to match the valence of the prime. This shift in ratings occurs because the prime generates an affective response and that response is misattributed to the neutral target. This occurs even when the participants are explicitly instructed to disregard the prime (Payne, Cheng, Govorun, and Stewart, 2005). This misattribution shows up in the "pleasant" or "unpleasant" ratings of the target. When test primes that are known to be positive or negative the ratings match the primes' known valence. When you test with primes of unknown valence the rating of the targets reveals the affect generated by the prime. Since affective response is a component of attitude, these ratings reveal the participant's attitude toward the prime image. This is the implicit measure of attitude.

Payne, Cheng, Govorun, and Stewart (2005) used pictures of African American and Caucasian individuals as primes in the AMP as an implicit measure of racial prejudice. The Caucasian participants rated the neutral target more pleasantly after a Caucasian prime and African American participants rated the neutral target more pleasantly after African American primes. Payne and colleagues (2005) compared this implicit measure to an explicit measure of

racial attitude. They found that for individuals who were not motivated to control their prejudice the AMP scores and explicit measures matched. Among individuals who were motivated to control their prejudice, possibly through censoring their self reported racial attitudes, the AMP scores showed a racial bias but the explicit measure did not.

Payne, Burkley and Stokes (2008) asked participants to rate the neutral targets (Chinese pictographs) in one test and then, in a second test, asked them to rate the prime pictures (photos of various races). Thus, they obtained both implicit and explicit measures of the participants' racial attitude. The scores on the explicit and implicit measures were positively correlated.

Moody, Okon and Gordon (2009) found voting preference in a presidential election, an explicit measure of attitude, matched the implicit measure of attitude toward the candidates obtained with the AMP. In two tests they found that McCain supporters rated neutral targets following images of McCain significantly more positively than targets following images of Obama and vice versa for Obama supporters.

Greenwald, Smith, Sriram, Bar-Anan, and Nosek (2009), conducted a study that was a combination of what Payne and colleagues (2005) and Moody and colleagues (2009) had conducted on race and voting preference. In order to see if race attitudes predicted an individual's voting preference, Greenwald and colleagues (2009) conducted a study that used two implicit measures and two explicit measures. They too found that the implicit measures and explicit measures were good predictors of who an individual would vote for, just as Moody, Okon, and Gordon (2009) did. They also found that symbolic racism and how conservative an individual was were two of the strongest predictors of voting preference (Greenwald, Smith, Sriram, Bar-Anan, & Nosek, 2009).

Moody and Gordon (2008) found that pictures that were iconic of Western culture were rated more positively than those iconic of Islamic culture. That is, participants had more negative attitudes towards Islamic culture. Gordon, Moody and Gray (2008) looked at participant's attitudes toward the penal system. The non-penal system images were rated more positively than penal system images. However, these procedures did not collect corroborating explicit measures of attitude.

Advantages of the AMP

The AMP was designed as a single subject test, but Moody and Gordon (2008) demonstrated it is reliable in a group testing setting. The AMP is easy to administer and completing a forty trial test takes only five minutes. Further, Moody and Gordon (2008) demonstrated that the AMP is reliable in a test-retest procedure. Further, the procedure seems stable and reliable across many procedural variations.

Various neutral targets have been used in the procedure. Payne, Cheng, Govorun, and Stewart (2005) and Payne, Burkley and Stokes (2008) used Chinese pictographs. Gordon in a series of studies assessing attitude towards Islamic culture versus Western culture, the penal system, and political candidates used random arrangements of gray squares (Moody & Gordon, 2008; Gordon, Moody & Gray, 2008; Moody, Okon & Gordon, 2009). Gordon (2009) actually tested whether Chinese pictographs, variations on ink blots or the gray squares mentioned above affected the procedure. The form of the neutral target had an effect but the effect was the same for positive and negative trials so the form of the neutral target does not matter. Thus, the AMP seems to be an implicit test of attitude that is convenient and reliable

STATEMENT OF THE PROBLEM

The purpose of this thesis was to investigate whether an explicit versus implicit measure of attitude would best assess changes in attitudes toward sexual behavior and pregnancy after a teen pregnancy prevention activity. I proposed that a comparison of the explicit versus implicit measures might reveal that the individuals' beliefs about sex and pregnancy only seem to change after an educational activity. That is, explicit measures show a change in attitude and we assume that the activity was successful. However, if an implicit measure of attitude reveals that attitudes are unchanged then the program was not effective. This may account for the persistence of teen sexual behavior after such educational interventions.

This was a mixed design study and the group educational activity was a between groups variable. One group participated in a sex education pregnancy prevention activity and a control group participated in a filler activity. Two other variables were within group variables. First, there was a comparison of explicit and implicit measures of attitude. Second, there was a pre activity and post activity comparison for both groups.

There were three hypotheses:

1. The two activities would have different effects on the explicit measure of attitude.
2. The two activities would not have different effects on the implicit measure of attitude.
3. The changes in the implicit measure of attitude would not be correlated with the changes in the explicit measure of attitude.

These three hypotheses were proposed because I expected participants to answer in a socially desirable manner after the pregnancy prevention activity. Thus the explicit measure would appear to show greater knowledge or more responsible attitudes toward sexual activity. However, I expected attitudes on the AMP to stay the same Pre and Post activity because the participant would be unable to adjust the implicit measure of attitude. Since the survey would show a shift in attitudes and the AMP would not, I believed the changes in the survey measure would not be correlated with the changes in the AMP.

METHOD

Participants

The study included 76 first-year heterosexual undergraduate students from a Southeastern university participating in partial fulfillment of a course requirement. There were 38 participants in the No Sex Ed group, 32 female and 6 male with a mean age of 19.21 and 38 in the Sex Ed group, 26 female and 12 male with a mean age of 19.

Materials

The materials used to conduct this assessment included a consent form (see Appendix A), a Pre and Post explicit measure of teen attitudes and knowledge about sexual behavior and teen pregnancy (see Appendix B and C). These measures were developed from the Teen Pregnancy Prevention Survey from an accredited North Carolina prevention program. To create the Pre and Post explicit measures questions from the Teen Pregnancy Prevention Survey from an accredited North Carolina prevention program were used to develop additional items. The total set of derived items was tested for reliability before they were used in the study. A set of 32 items was administered to 55 volunteers and the Cronbach's alpha for responses to the full 32 items was 0.91. The full set was then split in a proposed Pre and Post set and the respective Cronbach's were 0.81 and 0.83 for these sub sets of items supporting the use of the measure. The procedure also used a teen pregnancy prevention program activity that is part of an educational program from an accredited North Carolina prevention program (see Appendix D), a filler activity (see Appendix E) and standard Scantron forms.

The participants watched two videos of stimulus triads consisting of a prime, a neutral target and a filler stimulus. The primes included three known positive primes and three known negative primes from the International Affective Picture System (IAPS) (Lang, Bradley & Cuthbert, 1995). There were 22 primes of teen aged individuals rated by volunteers prior to conducting the study as obviously representative of social sexual activity and each prime was neutral in valence. The primes used showed heterosexual teens engaged in hugging, kissing, and cuddling in bed, as well as photos of contraceptives (condoms, birth control pills, etc.). The

social sexual rating for these images ranged from 1.54 to 2.67, 5.0 is the most representative and the valence ratings ranged from 2.36 to 3.08, 5.0 is the most positive. The neutral targets were patterns of gray squares, of varying darkness, arranged in various semi-random 12 x 12 matrices. The filler stimuli were homogenous blue fields with a numeral, corresponding to the number of the trial, centered in the field.

Procedure

The participants were tested in a group setting in a classroom with one experimenter present. The participants were asked to give informed consent before beginning the test (see Appendix A). The participants then read and heard the instructions listed in Appendix F.

The participants then completed the first test with the AMP. The first test began with four practice trials. After the practice trials and questions, if there were any, the participants began test 1. Test 1 included 22 stimulus triads with a 250 ms prime, a 1 s target and a 5 s filler or mask stimulus. The images were projected onto a screen at the front of the classroom as 32" x 32" images. A warning tone was presented over speakers in the room one second before the end of the filler stimulus. While the mask was on the screen the participants checked on a standard Scantron response sheet whether the target stimulus was "much more pleasing than average,""more pleasing than average," "less pleasing than average" or "much less pleasing than average." The mask stimulus included a numeral indicating to the participants in which space they were to check for that trial. Test 1 was complete after the participants rated one set of 22 target images.

Once test 1 was complete, the first teen pregnancy prevention survey (see Appendix B) was projected onto the screen at the front of the classroom. The participants then responded to the survey items on the Scantron form. The 38 participants in the Sex Ed group completed a 15 minute activity about teen sexual behavior and pregnancy known as the Pregnancy Probability game (see Appendix D). In this activity, participants were read a script educating them on teen pregnancy statistics. They then chose a Hersey Kiss from a paper bag that was 85 percent almond Kisses and 15 percent plain Kisses. If they chose a plain Kiss they were not pregnant, but if they chose an almond kiss they were pregnant. This was done twice, but the almond to

plain Kiss ratio was reversed the second time and after each round the participants discussed their reactions. The No Sex Ed group of 38 participants completed a 15 minute filler activity known as an Autograph sheet (see Appendix E). They simply went around the room collecting signatures from the other participants.

After completing the activity the participants began test 2. Test 2 was identical to test 1 except that the same 22 stimulus triads were randomized in a different combination and order. Once test 2 was complete, the second teen pregnancy prevention survey (see Appendix C) was projected onto the screen at the front of the classroom. The participants responded to the survey items on the Scantron form. When the participants completed test 2 they answered four demographic questions (see Appendix F). When the demographic questions had been answered the study was complete.

RESULTS

Table 1 below lists the means, standard deviations and sample size for the AMP scores and survey scores for pre and post measures. For the AMP scores, larger numbers represent a more positive attitude, meaning the individual was in favor of teen social sexual activity. For the survey scores a lower number represents that the individual was knowledgeable of sexually transmitted diseases, statistics and consequences of teen pregnancy, and contraceptive use or abstinence advocacy.

Table 1

		Pre AMP	Post AMP	Pre Survey	Post Survey
No Sex Ed group	mean	2.55	2.49	1.78	1.95
	std. deviation		0.43	0.46	0.30	0.32
Sex Ed Group	mean		2.35	2.33	1.88	1.85
	std. deviation		0.46	0.58	0.62	0.40

n=38 for all groups

The first hypothesis was that the two activities would have different effects on the explicit measure of attitude. A two-way mixed between-within analysis of variance was conducted for the survey scores. The between groups variable was the activity, pregnancy prevention versus filler, and the within groups variable was pre versus post test. The interaction between activity and pre post testing approached but did not reach significance, $F(1, 74)=3.385$, $p=0.07$. No other comparison was significant. The nearly significant interaction effect can be explained by a significant increase in survey scores for the No Sex Ed group, $F(1,37)=9.782$, $p=0.003$ and no change in survey scores for the Sex Ed group, $F(1,37)=0.092$, $p=0.764$. While the interaction was not significant one activity produced a significant change and the other activity did not produce a significant change. Thus, the two activities did have different effects on the survey scores.

The second hypothesis was that the two activities would not have different effects on the implicit measure of attitude. A two-way mixed between-within analysis of variance was conducted for Affect Misattribution Scores (AMP).The between groups variable was the activity, pregnancy prevention versus filler, and the within groups variable was pre versus post test. There was no

significant interaction between activity and pre post testing, F (1, 74)=0.25, p=0.62. However, the differences in scores for the two activities approached significance, F(1,74)=3.172, p=0.079, and the main effect of pre post testing was not significant, F(1,74)=0.96, p=0.33. Hypothesis 2 was supported because neither activity produced a change in AMP scores.

The third hypothesis was that the changes in the implicit measure of attitude would not be correlated with the changes in the explicit measure of attitude. Spearman Rho correlations were calculated for pre to post change in AMP scores and survey scores for both activity groups. Figures 1 and 2 show the scatter plots of the change scores for each group. No correlation was found for the change scores for the No Sex Ed group, r=.01, n=38, p=.976. No correlation was found for change scores in the Sex Ed group, r=.01, n=38, p=.954. The third hypothesis was supported.

As exploratory analysis looking at the two measures Spearman's Rho correlations were also calculated for pre and post AMP scores and pre and post survey scores for both groups, as well as pre survey and pre AMP scores for all 76 participants. A strong positive correlation was observed for pre and post AMP scores for the No Sex Ed group, r=.52, n=38, p=.001. A medium positive correlation was found for pre and post survey scores for the No Sex Ed group, r=.425, n=38, p=.008. A strong positive correlation was observed for pre and post AMP scores for the Sex Ed group, r=.79, n=38, p=.000. A strong positive correlation was also observed for pre and post survey scores for the Sex Ed group, r=.71, n=38, p=.000. A weak correlation was found for pre survey and pre AMP scores for all 76 participants, r=.13, n=76, p=.281(see Figures 3-7 for scatter plots of these scores).

Exploratory analysis was also conducted to look for gender differences in attitudes towards teen sexuality. A one-way analysis of variance was conducted for pre survey scores and pre AMP scores. There were no significant gender differences for survey scores, F(1,74)=1.075, p=.303 and no significant gender differences for AMP scores, F(1, 74)=.022, p=.883.

DISCUSSION

The present study proposed 3 hypotheses;

1) The two activities would have different effects on the explicit measure of attitude,

2) The two activities would not have different effects on the implicit measure of attitude,

3) The changes in the implicit measure of attitude would not be correlated with the changes in the explicit measure of attitude.

After analyzing the data all three of these hypotheses were supported. However, the data support the hypotheses in unexpected ways. There were no significant changes in either of the measures for the Sex Ed group. Conversely, the No Sex Ed group showed inconsistent changes in the two measures. On the survey measure, the No Sex Ed group showed less knowledge and greater acceptance of sexual activity in the Post test. On the AMP the same group showed a less positive attitude toward sexual behavior. Since this is the control group these changes would reflect some confound or random error.

The pregnancy prevention activity did not change students' knowledge of or attitude toward sexually transmitted diseases, statistics and consequences of teen pregnancy, and contraceptive use or abstinence advocacy. This is especially evident when random error in one group produced larger effects than the educational program. In the absence of a program effect it is impossible to ascertain whether the two measures, survey and AMP, yield different results.

There are several ways to extend this research. The pregnancy prevention activity used in this research is typically run on middle school or high school students. In the current test it was not possible to test minor school children. For the current research 18-20 year old college students were used instead. Running this study on individuals in the proposed age range may reveal different results.

Also, the activity used in this research is part of an overall program that has students take a pre and post program survey. Running the AMP both before and after the program alongside the survey during the actual program is also something that could be addressed.

Choosing an activity to use in this research was simple. The chosen sex education activity was not only part of a successful program, but also fun for the students and allowed them to voice their feelings. After administering the activity, a similar reaction was noted for all Sex Ed group participants; most did not take the activity seriously and the activity evoked little to no emotion. As stated before, random error in the No Sex Ed group had more effect than the activity of the Sex Ed group. Could this be due to a supposed successful activity in reality being unsuccessful? It is possible.

A similar reaction also occurred when giving the survey. Each survey asked 15 questions about sexually transmitted diseases, statistics and consequences of teen pregnancy, and contraceptive use or abstinence advocacy. The student's instructions were to simply answer the questions as they appeared on the screen. However, in each No Sex Ed and Sex Ed group tested, every one of them had individuals who would laugh at the questions or make crude remarks. This may have occurred due to lack of maturity, being uncomfortable about the subject in general, or trying to look dominant among the other students. Either way, it is hard not to think that these comments and reactions may encourage students to answer in a way that is socially desirable to the overall group and may be the reason why the No Sex Ed group who originally were more knowledgeable according to the pre survey appeared to be less knowledgeable in the post survey.

Reactions in the Sex Ed group were most notable during the final statement in the activity. It was stated "The only way to be 100% free of STDs and pregnancy is to practice abstinence." This statement was met with many negative comments and laughs from all Sex Ed groups.

At the end of the study, three additional demographic questions were asked. They were, "I participated in some sort of sexual education and teen pregnancy prevention program while in middle school or high school," "I feel that the program I participated in succeeded in teaching me about sex and how to prevent pregnancy," and "The knowledge I obtained from the program helped me make my decision on whether to be sexually active or not." For the first question, of the 38 participants in the Sex Ed group, 32 answered that yes, they had participated in some sort

of educational program, 5 answered no, and 1 said they did not remember. When asked the second question, 27 of the 38 participants in the Sex Ed group answered that yes, they felt that the program they participated in was successful, 9 answered no it was not successful, and 2 did not remember if it was or was not. After being asked the third and final question, "The knowledge I obtained from the program helped me make my decision on whether to be sexually active or not," only 9 participants in the Sex Ed group said yes, the program helped me make my decision and 29 participants said no it did not help me make my decision. The No Sex Ed group responses to the demographic questions were almost identical to the Sex Ed group's responses. I think the responses to the demographic questions offer some useful information. Teen sexuality and pregnancy prevention programs claim to be successful in educating and changing teen's attitudes towards sex and pregnancy, but according to the responses of both the No Sex Ed and Sex Ed group, these programs may not be as successful as they claim to be.

The data collected from this research along with the reactions from the students while the procedure was being administered suggests that the teen pregnancy prevention activity used is not as successful as practitioners report. A flawed activity and survey may be ineffective at changing attitudes and ineffective at measuring those same attitudes. This could account for the persistence of teen sexual behavior after educational interventions.

REFERENCES

Allen, J., Seitz, V., & Apfel, N. (2007). The sexually mature teen as a whole person: New directions in prevention and intervention for teen pregnancy and parenthood. *Child development and social policy: Knowledge for action* (pp. 185-199). Washington, DC US: American Psychological Association. doi:10.1037/11486-011

Baron, R. & Byrne, D. (1997). *Social Psychology* (8th ed.). Massachusetts: Allyn and Bacon.

Blanton, H., Jaccard, J., Christie, C., & Gonzales, P. (2007, May). Plausible assumptions, questionable assumptions and post hoc rationalizations: Will the real IAT, please stand up?. *Journal of Experimental Social Psychology*, 393-403. doi:10.1016/j.jesp.2006.10.019.

Fay, J. & Yanoff, J. (2000). What are teens telling us about sexual health? Results of the Second Annual Youth Conference of the Pennsylvania Coalition to Prevent Teen Pregnancy. *Journal of Sex Education and Therapy*, *25*(2), 169-177. Retrieved January 4, 2009, from PsycINFO database.

Fazio, R. & Olson, M. (2003). Implicit measures in social cognition research: Their meaning and use. *Annual Review of Psychology*, *54*(1), 297. Retrieved February 11, 2009, from Academic Search Premier database.

Fiedler, K., Messner, C., & Bluemke, M. (2006). Unresolved problems with the "I", the "A", and the "T": A logical and psychometric critique of the Implicit Association Test (IAT). *European Review of Social Psychology*, *17*(3), 74-147. doi:10.1080/10463280600681248

Gawronski, B. & LeBel, E. (2008). Understanding patterns of attitude change: When implicit measures show change, but explicit measures do not. *Journal of Experimental Social Psychology*, *44*(5), 1355-1361. doi:10.1016/j.jesp.2008.04.005

Geer, J. & Robertson, G. (2005). Implicit attitudes in sexuality: Gender differences. *Archives of Sexual Behavior*, *34*(6), 671-677. doi:10.1007/s10508-005-7923-8

Gordon, W., Moody, S., & Gray, A. (2008) Does mortality salience increase acceptance of punishment as measured with the Affect Misattribution Procedure. Poster presented at the Rocky Mountain Psychological Association meeting in Boise, Idaho.

Gordon, W. A. (2009) Does the form of the neutral target change the Affect Misattribution Procedure. Poster presented at the Rocky Mountain Psychological Association meeting in Albuquerque, New Mexico.

Greenwald, A., McGhee, D., & Schwartz, J. (1998, June). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology*, *74*(6), 1464-1480. doi:10.1037/0022-3514.74.6.1464

Greenwald, A., Smith, C., Sriram, N., Bar-Anan, Y., & Nosek, B. (2009). Implicit Race Attitudes Predicted Vote in the 2008 U.S. Presidential Election. *Analyses of Social Issues & Public Policy*, 9(1), 241-253. doi:10.1111/j.1530-2415.2009.01195.x.

Guttmacher Institute (2002). *Teen pregnancy: Trends and lessons learned.* Retrieved April 10, 2009, from http://www.guttmacher.org/pubs/tgr/05/1/gr050107.html

It's time…to get informed. (2009). Retrieved April, 10, 2009, from http://www.stayteen.org/get-informed/default.aspx

Heider, F. (1958). *The Psychology of Interpersonal Relations.* New York: Wiley.

Jackson County Department of Public Health (2009, Spring). Teen pregnancy prevention survey (Available from the Jackson County Department of Public Health, 538 Scotts Creek Road, Suite 100, Sylva NC 28779).Jackson County Department of Public Health (2009, Spring). Pregnancy Probability Game (Available from the Jackson County Department of Public Health, 538 Scotts Creek Road, Suite 100, Sylva NC 28779).

Kirby, D. (1995). Sex and HIV/AIDS education in schools. *British Medical Journal, 311*, 403.

Lang, P. J., Bradley, M. M., & Cuthbert, B. (1995). *International Affective Picture System*. Gainesville: University of Florida, Center for Research in Psychophysiology.

McKay, A. and P. Holowaty. (1997). Sexual health education: A study of adolescents' opinions, self-perceived needs, and current and preferred sources of information. *The Canadian Journal of Human Sexuality, 6* (1), 29-43.0

McKay, A. (2006). Trends in teen pregnancy in Canada with comparisons to U.S.A, and England/Wales. *Canadian Journal of Human Sexuality*, *15*(3), 157-161. Retrieved February 9, 2009, from PsycINFO database.

Moody, S. & Gordon, W.A. (2008) Does mortality salience increase Anti-Islamic attitudes as measured with the Affect Misattribution Procedure. Paper presented at the Rocky Mountain Psychological Association meeting in Boise, Idaho.

Moody, S., Okon, A., & Gordon, W. A. (2009). Does mortality salience change attitudes towards presidential candidates and the presidency? Poster presented at the Rocky Mountain Psychological Association meeting in Albuquerque, New Mexico.

National Center for Health Statistics (n.d.). *NCHS data on teenage pregnancy.* Retrieved from http://www.cdc.gov/nchs/data/infosheets/infosheet_teen_preg.htm#trends http://www.cdc.gov/nchs/data/nvsr/nvsr57/nvsr57_07.pdf

Nosek, B. (2007). Implicit-explicit relations. *Current Directions in Psychological Science*, *16*(2), 65-69. doi:10.1111/j.1467-8721.2007.00477.x

Payne, B., Burkley, M., & Stokes, M. (2008). Why do implicit and explicit attitude tests diverge? The role of structural fit. *Journal of Personality and Social Psychology*, *94*(1), 16-31. doi:10.1037/0022-3514.94.1.16

Payne, B., Cheng, C. M., Govorun, O., & Stewart, B. D. (2005). An inkblot for attitudes: Affect misattribution as implicit measurement. *Journal of Personality and Social Psychology*, *89*, 277-293.

Rydell, R. & McConnell, A. (2006). Understanding implicit and explicit attitude change: A systems of reasoning analysis. *Journal of Personality and Social Psychology*, *91*(6), 995-1008. doi:10.1037/0022-3514.91.6.995

Smylie, L., Maticka-Tyndale, E., & Boyd, D. (2008). Evaluation of a school-based sex education program delivered to grade nine students in Canada. *Sex Education*, *8*(1), 25-46. doi:10.1080/14681810701811795

The National Campaign to Prevent Teen Pregnancy (2009). *Cost of teen childbearing.* Retrieved April 10, 2009, from http://www.thenationalcampaign.org/costs/default.aspx

Weiner, B. (1995). *Judgments of responsibility: A foundation for a theory of social conduct*. New York: The Guilford Press.

Yampolskaya, S., Brown, E., & Vargo, A. (2004). Assessment of teen pregnancy prevention interventions among middle school youth. *Child and Adolescent Social Work Journal*, *21*(1), 69-83. Retrieved January 14, 2009, from Academic Search Premier database.

Appendix A

Evaluating a Pregnancy Prevention Activity
Consent Form

What is the purpose of this research?

The goal of this research is to investigate whether a teen pregnancy prevention activity changes attitudes toward sexual behavior and pregnancy.

What will be expected of me?

You will be asked to watch short video clips and to rate the images you see in the video. You will then be asked to participate in a brief 15 minute educational activity.

How long will the research take?

The entire testing process should take about 30 minutes.

Will my answers be anonymous?

Yes, your answers are anonymous. Your name will not be used at all in this research. You will be asked not to put your name on the data forms and the researcher will in no way connect you and the answers you provide.

Can I withdraw from the study if I decide to?

You may choose to withdraw from the procedure at anytime. You may also decline to respond if you do not wish to answer.

Is there any harm that I might experience from taking part in the study?

There is no foreseeable harm to the participants.

How will I benefit from taking part of the research?

Your participation will contribute to a better understanding of human attitudes toward sexual behavior and pregnancy. If you are interested you may view the results at.http://paws.wcu.edu/wgordon/evalutaingteenpreg.htm. The results should be posted by the end of the semester.

Who should I contact if I have questions or concerns about the research?

If you have any concerns about how you were treated during the experiment, you may contact the office of the IRB, a committee that oversees the ethical dimensions of the research process. The IRB office can be contacted at 227-3177. This research project has been approved by the IRB.

Name: _____ Date: _____
Participant
Signature: _____
Participant

Appendix B

Teen Sexuality Survey #1
Teen Pregnancy Prevention Survey

1. I think the only way you can be 100% sure you won't get pregnant is not to have sex.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
2. I know where to get condoms.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
3. Even if I use a condom or birth control during sex there is still a chance of pregnancy.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
4. It is a bad idea to have unprotected sex.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
5. If I had to use a condom during sex I wouldn't know how to.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
6. I think everyone, particularly teens, should wait to have sex until they are married.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
7. It is okay to have sex with someone you've just met at a party.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
8. Teens who practice safe sex can be certain they won't get pregnant.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
9. If teens are sexually active, I think they must use birth control pills or condoms every time.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
10. I am worried I will get pregnant even when I practice safe sex.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree

11. Teens are not bad if they have unprotected sex.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
12. I was taught not to have sex before marriage and I think that is the right way.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
13. Once you have had sex for the first time it is a bad idea to rush having sex again.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
14. It is okay if a teen has sex with more than one person in the same month.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
15. I don't worry about pregnancy when I don't use a condom.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree

Scoring Instructions
Teen Sexuality Survey #1

Scoring was as follows: A=1, B=2, C=3, D=4
For questions 5, 7, 8, 11, 14, and 15, scoring will be reversed and A=4, B=3, C=2, D=1. The highest possible score an individual could receive would be 60 and a high score on the survey would mean that the individual was not knowledgeable of sexually transmitted diseases, statistics and consequences of teen pregnancy, and contraceptive use or abstinence advocacy.

Appendix C

Teen Sexuality Survey #2
Teen Pregnancy Prevention Survey

1. When having unprotected sex I am scared of pregnancy.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
2. Teens who have unprotected sex are bad.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
3. Once you are no longer a virgin, it doesn't make sense to wait before having sex again.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
4. I think if I was given a condom I would know how to use it during sex.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
5. I think it is acceptable to have unprotected sex.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
6. Teens know when it is safe or okay to not use condoms or birth control pills during sex.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
7. If you don't have sex you can be 100% sure you won't get pregnant.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
8. Abstaining from sex before marriage is a good idea for everyone especially teens.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
9. Teens who use condoms when they have sex do not have to worry about pregnancy.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
10. You should not have sex with someone you don't know well.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree

11. I think it is okay to have sex before marriage even though I was taught not to.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
12. I feel confident when I use a condom or birth control during sex that no one will get pregnant.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
13. As long as I'm practicing safe sex I don't worry about getting pregnant.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
14. Teens who have had sex with more than 2 people in one month are bad.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
15. Condoms are pretty easy to get.
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree

Scoring Instructions
Teen Sexuality Survey #2

Scoring was as follows: A=1, B=2, C=3, D=4

For question 3, 5, 6, 9, 11, 12, and 13 the scoring will be reversed and A=4, B=3, C=2, D=1. The highest possible score an individual could receive would be 60 and a high score on the survey would mean that the individual was not knowledgeable of sexually transmitted diseases, statistics and consequences of teen pregnancy, and contraceptive use or abstinence advocacy.

Appendix D

Teen Sexuality/Pregnancy Prevention Activity
Pregnancy Probability Game

Participants were given a note card attached to a string to be worn like a necklace. They wrote on one side of the card what their lives would be like now and in the future if they were expecting a child. On the other side of the card they wrote what their lives would be like now and in the future if they were not expecting a child.

A short lesson on teen pregnancy and sexuality was then given followed by the main activity. The participants were then told that during the first several months of sexual activity contraceptive use is scarce and because of this there is an 85 percent chance that sexually active teens will conceive a child.

At this point the group passed around a paper bag filled with Hershey Kisses. The candies in the bag will be a mixture of 15 percent plain and 85 percent almond Hersey Kisses. Each participant blindly selected one piece of candy. If a student chose a plain Kiss then that person was not expecting a child and he or she wore the note card with the "not expecting a child" side facing out. Participants who chose an almond Kiss were expecting a child and placed the note card side corresponding to "expecting a child" facing out.

The participants were then told that after several months of sexual activity contraceptive use increases and because of this there is a 15 percent chance that sexually active teens will conceive a child.

At this point the group passed around a second paper bag filled with Hershey Kisses. The candies in the bag were a mixture of 85 percent plain and 15 percent almond Hersey Kisses. Each participant blindly selected one piece of candy. If a student chose a plain Kiss then that person was not expecting a child and he or she will wore the note card with the "not expecting a child" side facing out. Participants who chose an almond Kiss were expecting a child and placed the note card side corresponding to "expecting a child" facing out.

The activity ended with a discussion about how the expecting students felt about the situation and a short lecture about how contraceptives although helpful, are not 100 percent preventive of pregnancy and STDs.

Instructions
Teen Sexuality/Pregnancy Prevention Activity
Pregnancy Probability Game

Activity will begin by passing out a note card to each participant.

After note cards are passed out say:
Each of you has been given a note card with a string attached to the top. With the string facing you, please write down on the note card what your life is like now and how it will be in the future.

Now flip the note card over. Please make sure the string is still facing you. On this side I would like you to write down what your life would be like now and in the future if you were to find out that you were pregnant or had gotten someone pregnant.

After participants done writing say:
When someone decides to become sexually active they are not likely to use any contraceptives. This may be because they are unprepared, do not know where to get contraceptives, or do not feel like they need to use them. Within the first several months of being sexually active, 85% of this group will become pregnant or get someone pregnant. Let's find out whom!

A paper bag filled with 85% almond Hersey Kisses and 15% plain Hersey Kisses will then be passed to each participant. Each participant will be instructed to take one Hersey Kiss from the bag.

After passing out the Kisses say:
If you got an almond Kiss please stand up. Congratulations, you're pregnant. Now please take your note card and if you chose an almond Kiss place the side of the note card pertaining to being pregnant on facing out. If you chose a plain Kiss place the side of the note card pertaining to not being pregnant facing out. Those of you who are pregnant, how do you feel? (Let them discuss).
Now, during the second year of being sexually active, you are more educated and experienced and you will begin to use contraceptives more regularly.

Another paper bag filled with 15% almond Hersey Kisses and 85% plain Hersey Kisses will then be passed to each participant. Each participant will be instructed to take on Hersey Kiss from the bag.

After passing out the Kisses say:
If you got an almond Kiss this time please stand up. (Several students will stand up for the first time or again). Congratulations, you're pregnant. Now please take the note card you are wearing and place the side that corresponds with your Kiss facing forward. Are any of you pregnant a second time? How do you feel?

During your second year being sexually active your chances of becoming pregnant with the use of contraceptives goes from 85% to 15%. Why does this happen? Because even though you are practicing safe sex, there is still room for error. Contraceptives are not 100% effective. The only way to be 100% free of STDs and pregnancy is to practice abstinence.

Appendix E

Filler Activity
Autograph Sheet

Those participating in the filler or control group will each be given a sheet of paper that lists different experiences and traits such as, “Has brown eyes” or “Has been to Europe.” The group will be instructed to go around the room and find someone who fits the statement and get that person’s signature. Each person can only sign any given sheet one time. After 10 minutes, the participants will return to their seats and a discussion about what each individual signed will begin. The entire activity will take 15 minutes to complete.

Filler Activity Instructions
Autograph Sheet

Find a person who fits one of the categories below. First, introduce yourself and if he/she fits the description, get the autograph from that person. Try to get as many signatures from different people as possible. Each person can only sign your sheet one time.

Filler Activity
Autograph Sheet

1. Has the same color hair as you_____
2. Has been to Europe_____
3. Has a cat or a dog_____
4. Favorite color is lime green_____
5. Has been to the ocean_____
6. Loves the beach_____
7. Has been to 10 states_____
8. Can count to five in another language_____
9. Favorite food is sushi_____
10. Likes to sing_____
11. Has seen *Monsters vs. Aliens* _____
12. Favorite sport is football_____
13. Loves spending time outdoors_____
14. Has lived in more than one state_____
15. Was born outside of the United States_____
16. Loves the Chicago White Sox_____
17. Has a brother and a sister_____
18. Favorite season is fall_____
19. Loves to eat steak_____
20. Has been to at least 5 WCU basketball games_____
21. Is a vegetarian_____
22. Plays a sport at WCU_____
23. Has traveled outside the U.S. in the past year_____
24. Is in a fraternity or sorority_____
25. Exercises every day_____
26. Has more than four pets_____
27. Went somewhere for spring break_____
28. Has attended a concert in the past year_____
29. Is originally from the WNC region_____
30. Has seen or met a movie star in person_____

Appendix F

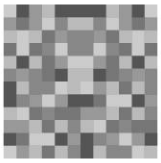
Instructions

Thank you for agreeing to participate in this study on the evaluation of a teen pregnancy prevention activity.

During this test you will be asked to judge whether a simple pattern of gray squares is either:

Much less pleasing than average or 1
Less pleasing than average or 2
More pleasing than average or 3
Much more pleasing than average or 4

The gray square images will look something like this:



We ask that you make your judgment quickly based on your immediate impression rather than trying to analyze the image.

To help you make quick judgments there is a specific way we will present the images.
Each image will be presented very briefly, only 1 second.

So that you can be sure to see the image each presentation will be preceded by a warning picture.

The warning picture will be located in the same spot where the image will appear so focusing on the warning picture will prepare you to see the test image when it appears.

The typical warning pictures will look something like this:

It is important to note that having seen a positive picture can sometimes make you judge the gray square more positively than you otherwise would.

Likewise, having just seen a negative picture can make you judge the gray square more negatively.

Because we are interested in studying how people make quick judgments please ignore this bias.

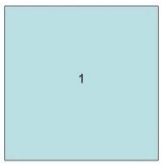
Please try your best not to let the warning pictures bias your judgment of the gray squares.

Give us an honest assessment of the gray squares, regardless of the picture that precedes them.

We will place a blue box over the gray square when 1 second is up. The blue box will be numbered and the number is to help you rate the image in the correct spot on your response sheet.

The blue box after image one will have a 1 and you should place your response in the first space.

The blue box will look something like this:



Once the blue box appears you have 5 seconds to fill in one of the four circles on the Scantron form. Please note that you are only using circles 1 through 4 and circle 5 has been lined out. For all the images please respond with 1 for much less pleasing than average, 2 less pleasing than average, 3 more pleasing than average and 4 much more pleasing than average.

To make sure that you are looking at the screen before the warning picture appears a tone will sound one second before the warning picture appears.

When you hear the tone make sure one circle is filled and then look up at the screen.
Again, the sequence will be:

Warning picture → Gray squares for one second → Blue box for 5 seconds (a warning tone at 4 seconds)

To make sure that you are ready we will present four practice trials.
Please mark your responses for these four practice trials on the Scantron form in the top section beginning with item 1.

Are there any questions before you practice?

At the beginning of the practice trials and again at the beginning of the actual test there will be a countdown to start.

Three blue squares, numbered 1 then 2 then 3 will count you down to the start, then the first warning picture and then the first gray image and the blue square.

At the end of the practice trials say:
Are there any questions? (**Answer questions or proceed)**
You will now rate 22 images.

At the end of the first test say:
I will now ask you to answer a brief survey on teen pregnancy prevention. Please place your answers on the second section of the Scantron form beginning with #51. When you are finished please sit quietly and wait for further instruction.
(The survey will be projected onto the screen)

After the participants have completed the survey say:
You will now participate in a 15 minute activity.
(The 15 minute activity for the control group will be Autograph Sheet and the activity for the experimental group will be the Pregnancy Probability Game.)

After the activity is completed say:
Thank you. Please turn over your Scantron form and begin with item #101.
You will now rate 22 more images.

At the end of the second test say:
I will now ask you to answer another brief survey on teen pregnancy prevention.

At the end of the second survey say:
Please answer the questions that appear on the screen.
(These demographic questions will be projected onto the screen)
Please enter your birth date in the BIRTH DATE section on the front of the Scantron.
Please enter your sex in the SEX section on the front of the Scantron.
Using the Scantron form and beginning with item #161 answer the following questions.

I participated in some sort of sexual education and teen pregnancy prevention program while in middle school or high school.
A. Yes
B. No
C. Don't remember

I feel that the program I participated in succeeded in teaching me about sex and how to prevent pregnancy.
A. Yes
B. No
C. Don't remember/Didn't participate in a program

The knowledge I obtained from the program helped me make my decision on whether to be sexually active or not.
A. Yes
B. No
C. Don't remember/Didn't participate in a program

I consider my sexual orientation to be
A. Heterosexual
B. Homosexual

Figure 1

Scatter plot for Pre to Post Changes in AMP Scores versus Survey Scores for the Control Group

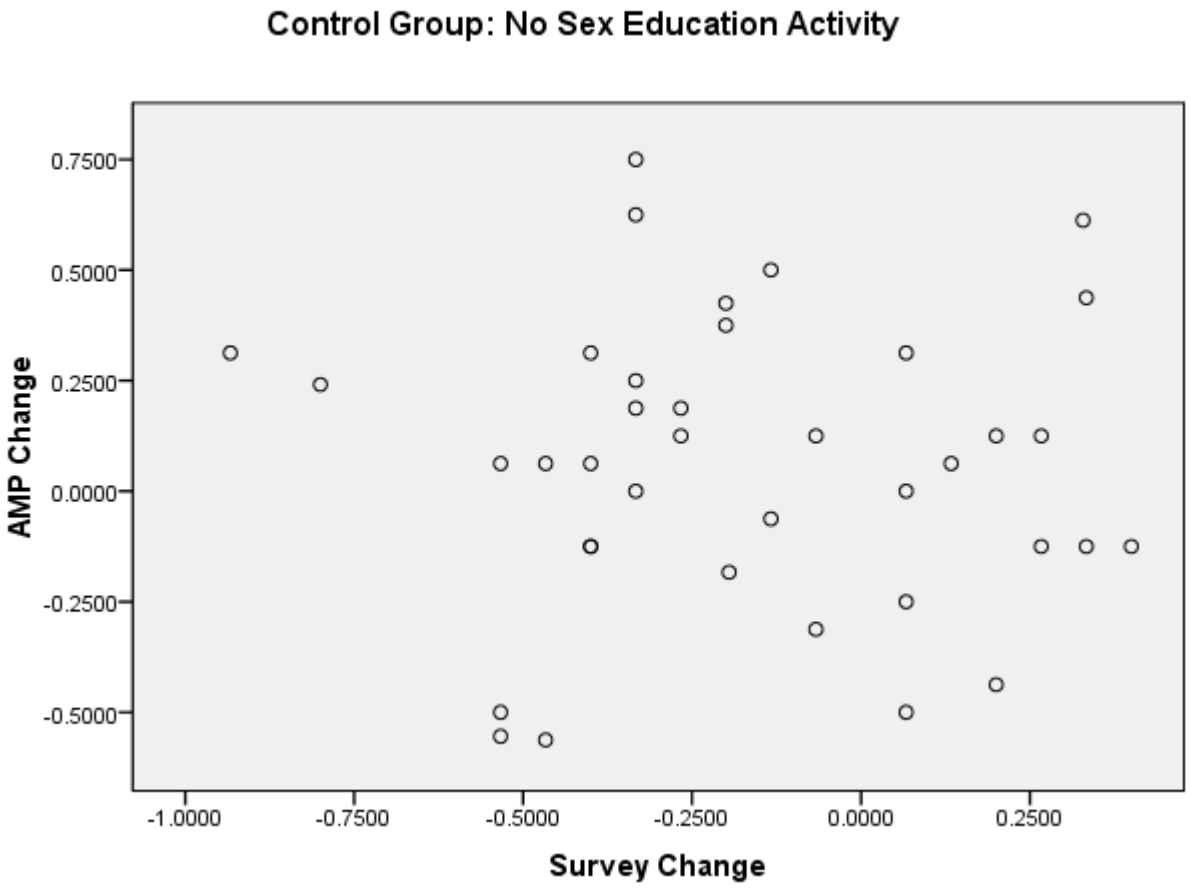


Figure 2

Scatter plot for Pre to Post Changes in AMP Scores versus Survey Scores for the Experimental Group

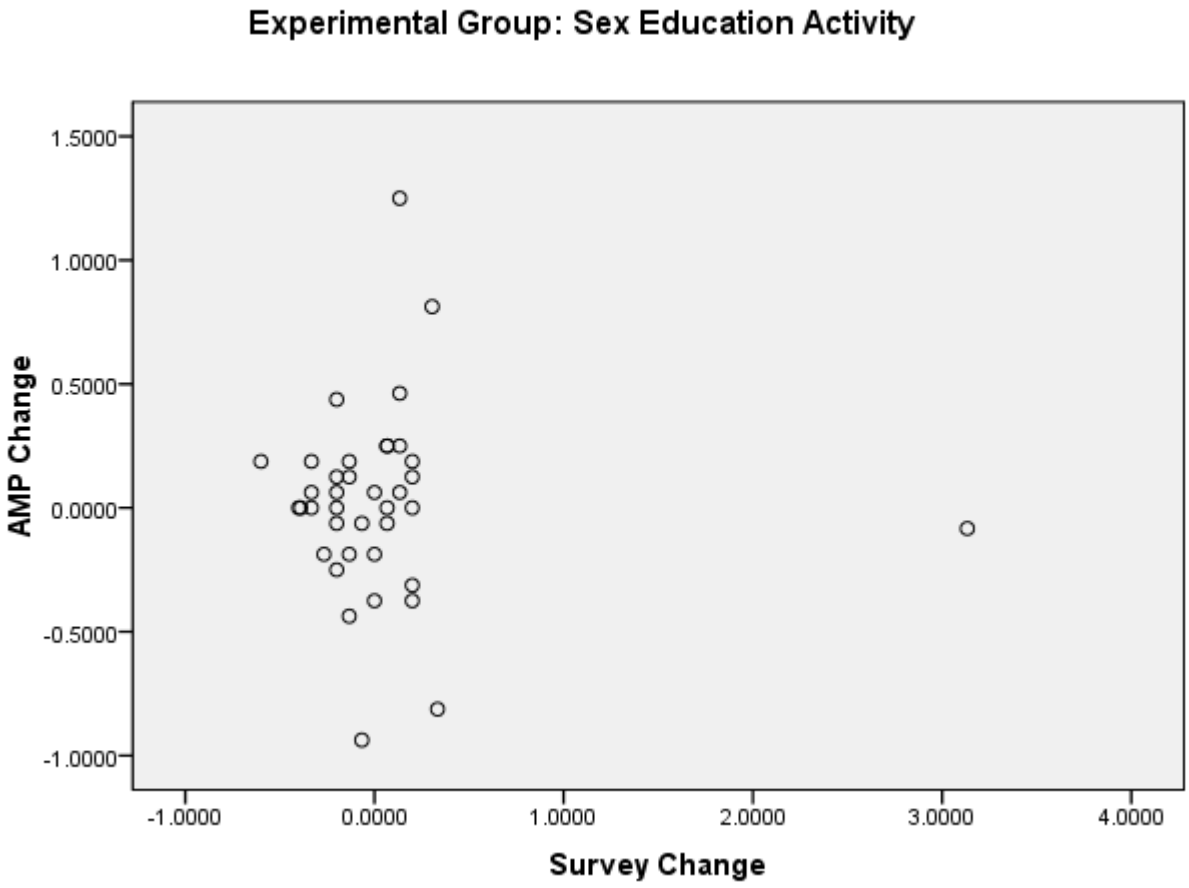


Figure 3

Scatter plot for Pre to Post AMP Scores for the Control Group

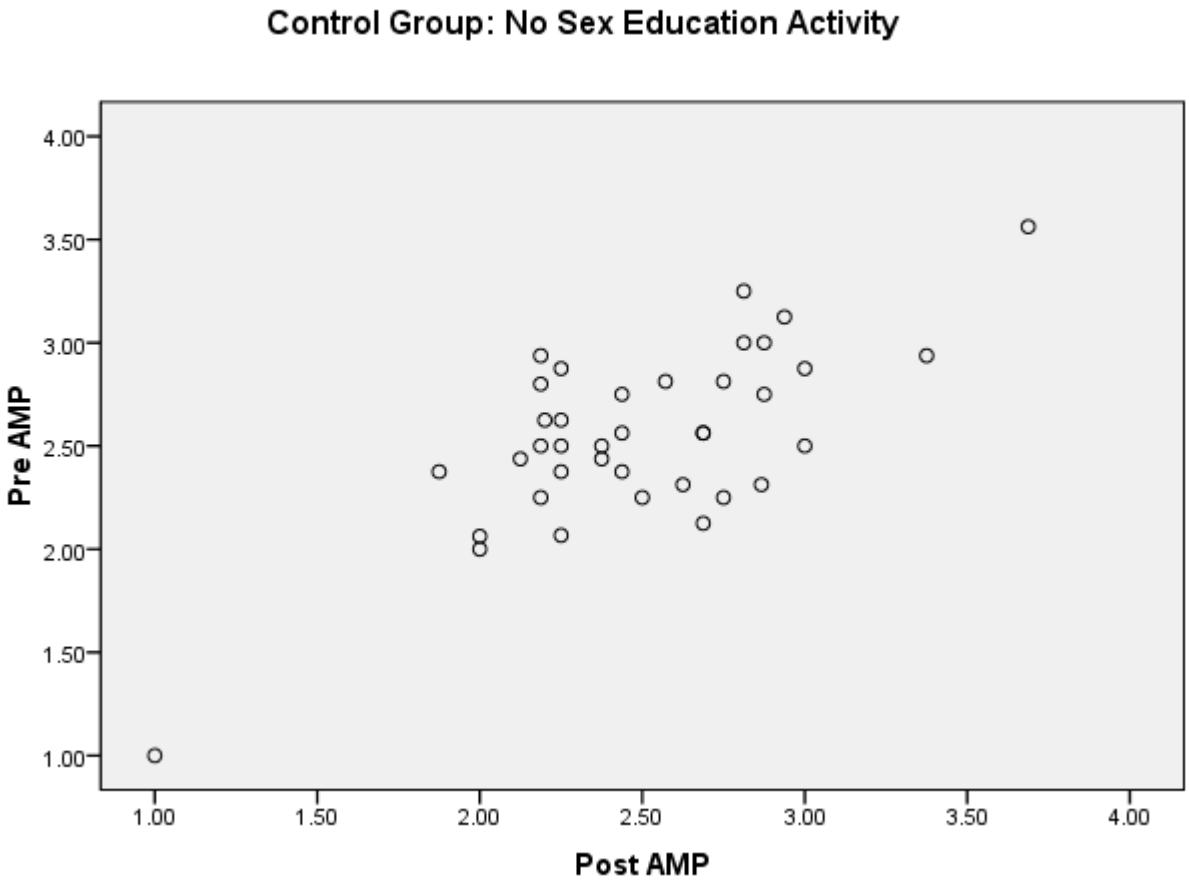


Figure 4

Scatter plot for Pre to Post AMP Scores for the Experimental Group

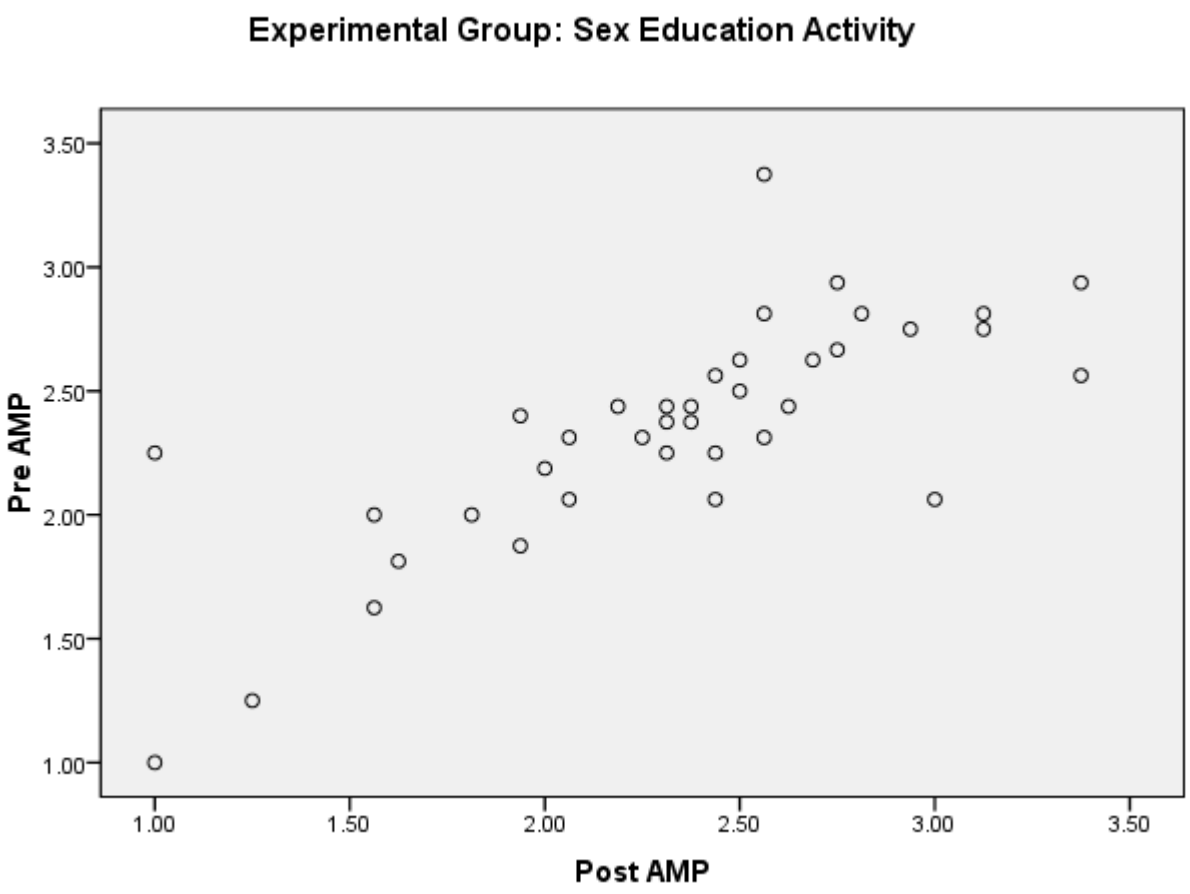


Figure 5

Scatter plot for Pre to Post Survey Scores for the Control Group

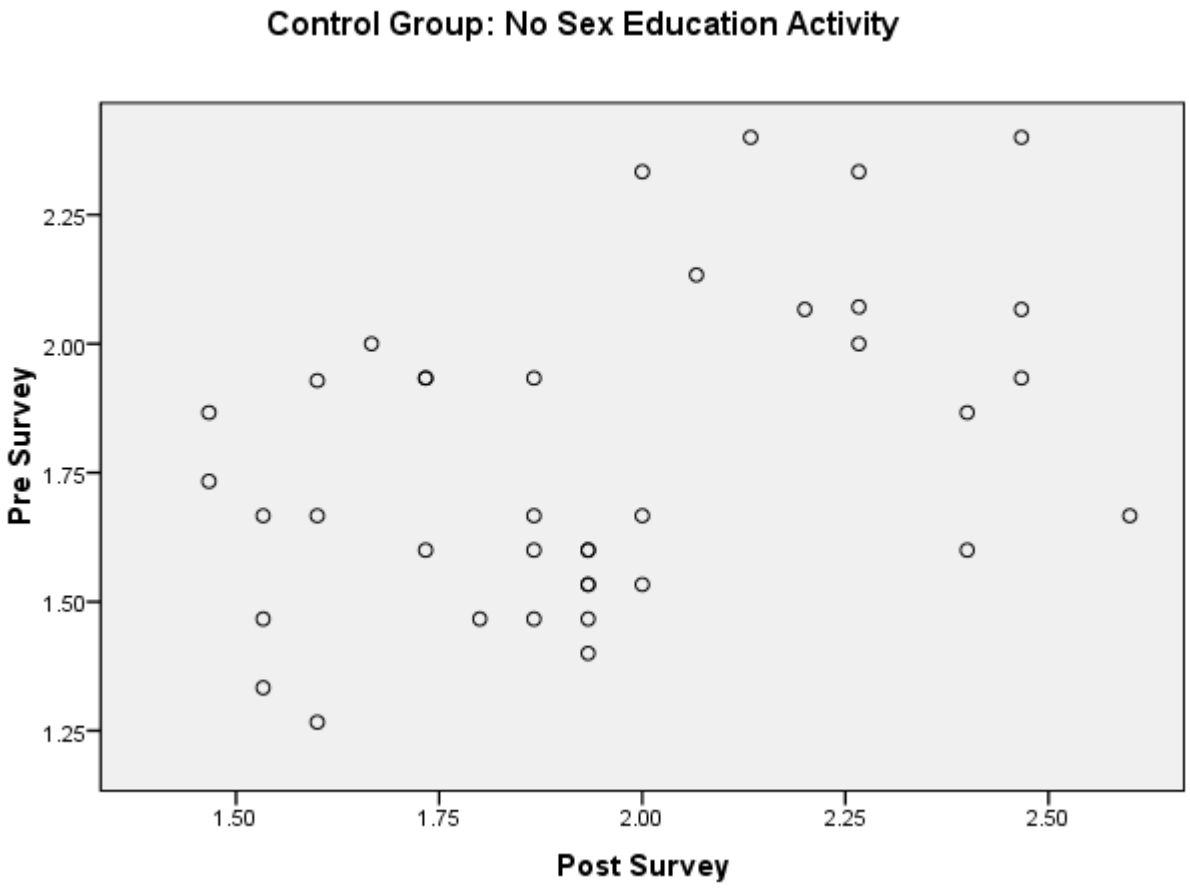


Figure 6

Scatter plot for Pre to Post Survey Scores for the Experimental Group

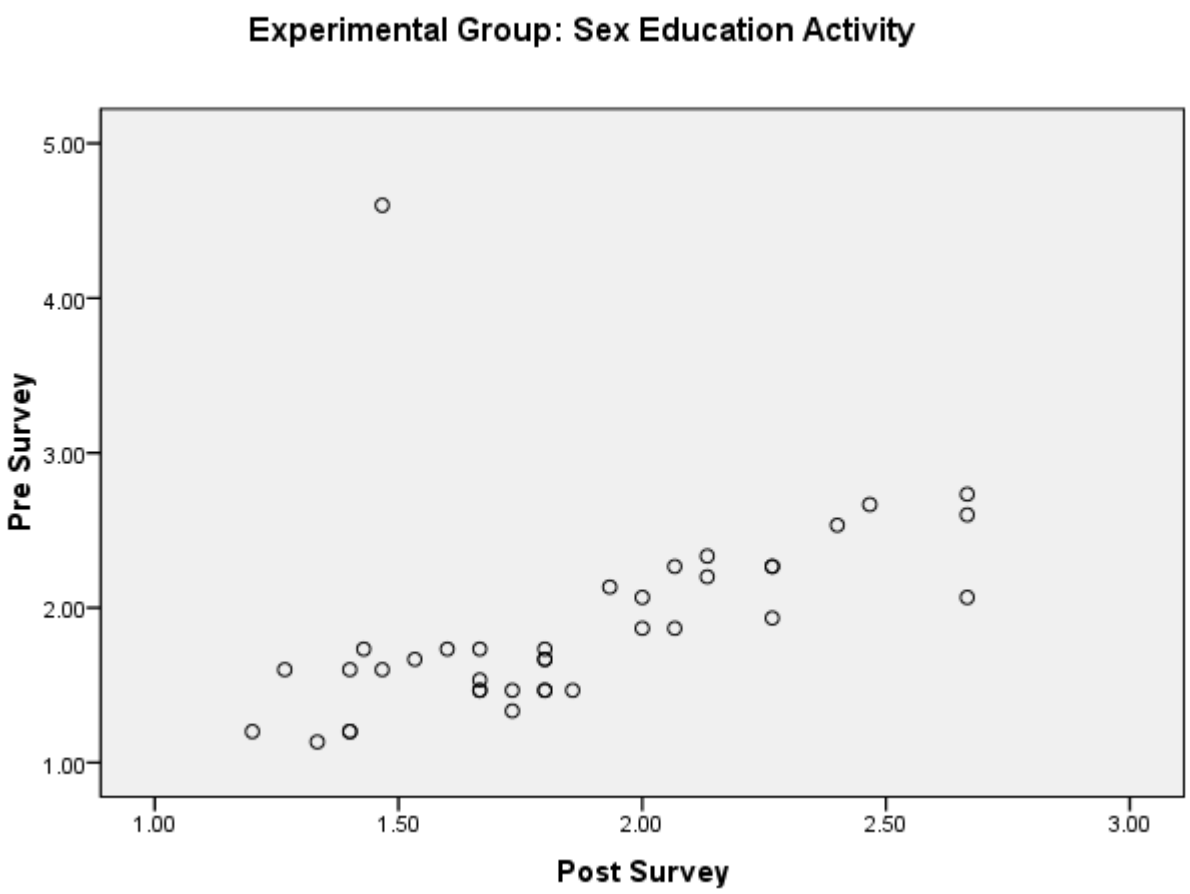


Figure 7

Scatter plot for Pre AMP Scores and Pre Survey Scores for the entire participant pool